Recent Research Advances and Filariasis Elimination Campaign in India

Report of an interactive meeting

Vector Control Research Centre, Pondicherry, India

30 July 1999

Indian Council of Medical Research
National Anti-Malaria Campaign
National Institute of Communicable Diseases

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Preface

Availability of new tools, resolve of the international organizations and recent operational experiences gained through the control programmes for dracunculiasis, onchocerciasis and polio generated hope, enthusiasm and serious thinking about the possibility of lymphatic filariasis elimination. Following the World Health Assembly (WHA) resolution in 1997, the campaign to control/eliminate lymphatic filariasis gained momentum and is at various stages of progress in some of the affected countries. By virtue of the geographical and numerical magnitude of the problem, control of filariasis in India poses a serious challenge to all the concerned. However, India, being a signatory to the WHA resolution and largest endemic country, can not afford to lag behind and needs to act without much delay. A concerted effort by the health authorities, programme managers and researchers is required to meet this challenge. Keeping this in mind, Vector Control Research Centre (VCRC) tried to bring together the people concerned with filariasis control, at state and national level, to stimulate discussion and prepare a blue print for elimination programme. The National Anti-Malaria Programme (NAMP) and National Institute of Communicable Diseases (NICD) are important partners in this venture. A few potential donors and NonGovernmental Organizations (NGOs) have also been involved. One very positive aspect of this interaction is that everybody believes in the concept of elimination and the necessity to orient the national filaria control programme in that direction. The deliberations of this meeting are summarized in this booklet. Hope that the optimism, evident in every participant's views, will be turned into action and positive results.

Director
Vector Control Research Centre

Executive Summary

An interactive meeting on 'Recent research advances and filariasis elimination campaign in India' was held to take stock of the current filaria control situation, review recent research findings and prepare a plan of action for elimination campaign in India.

Many parts of the country are affected by lympatic filariasis and wherever a control programme exists, there is a slow but steady decline in prevalence of the disease. The annual diethylcarbamazine (DEC) sigle-dose mass chemotherapy strategy is being implemented on pilot scale in 13 districts in different states. Experiences and effectiveness of this pilot study are expected to be available in due course of time. While one endemic state has extended the annual single dose mass chemotherapy programme to cover almost all the endemic districts, a few other states pose special problems on account of, perhaps, poor sensitization of health personnel at state and district level and also communities. A few states are eager to implement the programme but prefer to await policy guidelines.

Along with control of infection transmission, there is a need to introduce and strengthen morbidity management strategies to alleviate the suffering of the affected individuals. This is expected to go a long way in making control/elimination programmes more acceptable to the communities.

Many recent research outcomes such as the immunochromatographic (ICT) test, country wide endemicity maps, interruption of transmission after 4-6 rounds of spaced single dose mass treatment and very high cost-benefit ratio of control programmes are very encouraging and they make implementation and evaluation of large scale control/elimination programmes easier.

The meeting recommended that a policy statement on the elimination programme should be elicited from the government by the end of year 2000. The DEC annual single dose mass treatment should gradually be extended and by the year 2010, all the endemic districts should be brought under its purview. Necessary steps to achieve this target - man-power training, development of appropriate advocacy, enlistment of partners from NGOs and industry and mobilization of resources - should jointly be initiated by the national programme authorities and researchers.

The joint effort of organizations such as ICMR and its institutes, NAMP and NICD and state level programmes and donors and NGOs is necessary to achieve the goal of filariasis elimination. The expertise and technical support of World Health Organization (WHO) and other similar institutions is equally important.

Recommendations

- The working groups urge the authorities of the Ministry of Health and Family Welfare to endorse the policy enunciated for lymphatic filariasis elimination as adopted by the World Health Assembly through a resolution WHA 50.29 in 1997 and appropriate strategies should be developed to meet the requirements of the new policy.

- The policy statement on lymphatic filariasis should be elicited by the year 2000.

- A strategic plan enunciating the expansion of the annual single-dose DEC mass chemotherapy in a phased manner so as to cover 30% and 70% of the endemic villages by year 2004 and 2008 respectively and all the endemic areas by year 2010 should be implemented. Appropriate advocacy should be developed with an aim of sustaining the programme sufficiently longer.

- The new strategies should be implemented using the existing infra-structure. However, a review of the present infra-structure is felt necessary to further strengthen the control programme and reorient the resources in view of elimination campaign.

- Study the training requirements and develop appropriate training programmes at the Village, district and state level.

- It is essential to identify the potential partners including NGOs, industry and media at all levels so as to ensure their active involvement and sustain the campaign for filariasis elimination.

1. OBJECTIVE

Development of a strategic plan to eliminate lymphatic filariasis as a public health problem in the light of recent advances in research and experiences gained through on-going control programmes within the country

2. REVIEW OF RECENT ADVANCES IN FILARIASIS RESEARCH

Economic burden

- Lymphatic filariasis imposes a huge economic burden on the country and is an important cause of poverty in endemic areas. The annual economic loss is estimated at about Rs. 3000 crores[1].

Rapid Assessment

- Methods are now available for rapid assessment of filariasis prevalence through key informants and physical examination by health workers[2,3]. These methods help rapid delimitation of endemic areas in a short time.

Mapping of endemic areas

- Methods and tools for rapid epidemiological mapping and stratification of endemic areas are now available[4].

Diagnosis of human infection

- An immunochromatography test (ICT) is developed for the diagnosis of infection through day time finger prick blood[5]. Human antigenaemia levels can now be quantified using OG4C3 ELISA[6]. These tools have considerably eased the task of diagnosis and intervention evaluation and have the potential to replace the conventional night blood examination.

Detection of mosquito infection

- DNA probes have been developed to determine the infection status of vector mosquitoes. Large number of mosquitoes can be processed in shorter time[7,8].

Chemotherapy

- Single-dose of DEC (6mg/kg) can reduce the circulating microfilariae (mf) by 80-90% and maintains the reduced levels of mf density for about one year[9,10].

- Ivermectin, a new anti-filarial drug, also shows excellent microfilaricidal effect[11].

- Combination of DEC+ivermectin shows better microfilaricidal effect than either of the drugs alone[12].

- Single dose Albendazole (400 or 600 mg), particularly in combination with Ivermectin or DEC, also shows prolonged microfilaricidal effect[13,14,15]. Albendazole is also a very effective and commonly used drug (particularly in children) against intestinal helminths. Thus, the benefits of using DEC+albendazole are two fold. Various issues involved in the large scale use of DEC+Albendazole are currently being debated.

Transmission control

- Four to six rounds of spaced single dose of mass DEC or ivermectin administration drastically reduces the transmission of filariasis (VCRC, unpublished).

- Mass treatment with DEC+Ivermectin is much better than either of the drug in transmission control (VCRC, unpublished).

- Chemotherapy augmented with vector control results in well sustained transmission control (Centre for Research in Medical Entomology, unpublished).

Large scale control programmes

- Compliance with mass annual single dose DEC treatment is better in rural areas than in urban areas (VCRC, unpublished).

- Health services are better placed and capable of implementing the control program (VCRC, unpublished).

Morbidity control

- Simple foot care reduces intensity of acute episodes of adenolymphangitis (ADL) and also morbidity (VCRC, unpublished).

- Treatment with antibiotics is useful to prevent ADL episodes (VCRC, unpublished).

Epidemiological models

- Two mathematical models - EPIFL[16] and LYMFASIM[17] - have been developed. They are useful in predicting the intervention outcomes based on duration and intensity of control and thus serve as decision making tools.

Cost of control programme

- The per capita cost of annual single-dose mass chemotherapy with DEC is Rs. 1.42. This includes Rs. 1.05 on inputs such as drugs, transport etc. and Rs. 0.37 opportunity costs[18].

3. INTERACTIVE MEETING - PROCEEDINGS OF THE MORNING SESSION

Shri M. Kannan, Director (Public Health), Ministry of Health and Family Welfare, New Delhi, accepted to chair the proceedings of the meeting.

Welcome address (Dr.P.K. Das, Director, VCRC)

Dr. P.K. Das had extended warm welcome to all the participants. He outlined the objectives of the workshop and reminded the gathering of the fact that India is a signatory to the World Health Assembly resolution on elimination of lymphatic filariasis. Dr. Das emphasized that while we continue to explore for better and newer tools of control, we should forge ahead with filariasis elimination campaign using annual single-dose mass chemotherapy with DEC, which is currently considered as the best available option. He expressed hope that the deliberations will lead to time bound plan of action.

Role of ICMR in filariasis elimination campaign (Dr. Lalit Kant, Senior Deputy Director General, ICMR)

Dr. Lalit Kant recalled the contribution that ICMR has made towards filariasis control in the country since 1949. He said that recent advances in science and technology have encouraged the scientific community to shift the strategy from control to elimination. Dr. Lalit Kant further elaborated on these advances and said that the challenge is to demonstrate the feasibility, application and acceptance of large scale trials and test alternate strategies for cost-effectiveness. He informed the meeting about the new initiatives ICMR has taken by constituting a task force and inviting research proposals in identified areas. The broad areas of research are Applied Field Research, Product Development and Strategic Research. VCRC and Regional Medical Research Centre (RMRC), Bhubaneswar, are the two ICMR institutes which have filariasis research as their thrust area and are involved in ICMR's ongoing activities and planning further activities.

Lymphatic Filariasis control in South-east Asia (Dr. P. Chusak Prasittisuk, Regional Entomologist, South-east Asian Regional Office, WHO, New Delhi)

Dr. Chusak stressed the need of advocacy measures as many countries accorded filariasis control low priority. He mentioned that a large proportion of the infected population and people at risk of infection live in Asia, but, many countries of the region do not have good infrastructure to meet the challenge of elimination. He said that India has the strength of expertise and an established control programme. Dr. Chusak pleaded for rational use of resources and net-working to achieve the final goal.

Lymphatic Filariasis in India and the on-going elimination campaign (Dr. P.K. Srivastava, Deputy Director, NAMP, New Delhi)

Dr. Srivstava presented the current organizational structure and strategy of the National Filaria Control Program in India. He summarized all ongoing control activities including the recently implemented pilot scale annual single-dose mass chemotherapy program in 13 districts of

different states. He showed the declining trends of filariasis in the areas where control activities have been going on. He said that NAMP is gearing itself up and alive to the needs of the elimination programme. In this context he pointed out that India requires a large quantity of DEC tablets and expressed confidence that the pace of DEC production can be accelerated in view of expansion of the programme. Dr. Srivastava also pointed out the need of fine tuning research vis-a-vis operational problems.

Transmission control (Dr. P.K. Das, Director, VCRC, Pondicherry)

Dr. Das presented evidences to show that four rounds of spaced DEC administration brought down transmission of filariasis drastically. He also spoke of the need to have more interaction among the ICMR institutions, NAMP, NICD, industry and NGOs. He mentioned that the need of the hour is to get the support of policy makers.

Combination of drugs for filariasis control (Dr. V. Kumaraswamy, Deputy Director, Tuberculosis Research Centre (TRC), Chennai)

Dr. Kumaraswamy dwelt on recent advances in chemotherapy and the evolution of annual single-dose strategy and advent of ivermectin and combination chemotherapy for filariasis control. He presented the comparative efficacy of DEC or ivermectin alone and that of combination of ivermectin+DEC, DEC+Albendazole and Ivermectin+Albendazole and concluded that the combination of drugs is more effective.

Deworming and Enhanced Vitamin A (DEVTA) project (Dr. Shally Avasthy, Project leader, DEVTA project, Lucknow)

Dr. Shally presented the design, implementation and results of the study on the effect of Albendazole treatment on weight gain and stunted growth in children (1-6 years). The project, implemented through anganwadi workers in Lucknow district of Uttar Pradesh (U.P), showed that children treated with Albendazole at 6-monthly intervals gained more weight and showed better growth. The highlights of the project included acceptance of the programme by the community, generation of a demand for drug, low side effects and expulsion of worms in 5-10% of the treated children within 48 hours.

Man-power development and training (Dr. R.C. Sharma, Deputy Director, NICD, New Delhi)

Dr. Sharma presented the details of training facilities available with NICD. He emphasized the need to train programme managers, clinicians, medical officers, entomologists and biologists in the effective implementation of elimination strategy. However, he emphasized that for a need based development of curricula and training program, the policy for elimination and phasing of the program should be clearly spelt out.

International support for elimination programme (Dr. Gautam Biswas, WHO, Geneva)

Dr. Biswas outlined the financial, material and technical support being provided by the various international partners in the elimination programme. The entire supply of Albendazole

required for the global elimination of lymphatic filariasis had been pledged to the WHO by Smith Kline Beecham. Lymphatic filariasis endemic countries could send their requests for Albendazole to WHO. He brought to the knowledge of the group that the DG, WHO, had stated that filariasis elimination is one of the priorities for the WHO and will continue to receive all possible support of WHO.

Large scale control programme in Tamil Nadu (Dr. N.C. Appavoo, Director (Filaria and Malaria), Directorate of Public Health, Government of Tamil Nadu, Chennai)

Dr. Appavoo made an audio-visual presentation on the genesis, goals and extension of the annual single-dose DEC programme in Tamil Nadu. He said that, currently, 12 districts that are endemic for filariasis in Tamil Nadu are covered by the annual DEC mass chemotherapy.

Conclusions of the morning session

At the end of presentation the following points emerged during the discussion:

- It is mandatory that India participates in the global filariasis elimination campaign
- A strategic plan should be developed for its implementation towards elimination
- Institutions such as ICMR, NAMP and NICD and state health departments should work in partnership mode to achieve this goal
- It is largely felt that India has adequate expertise and necessary infrastructure to undertake the programme

4. INTERACTIVE MEETING - PROCEEDINGS OF THE AFTER-NOON SESSION

The plenary of the meeting decided to form into three working groups and discuss the following three issues and make specific recommendations:

1. Policy and advocacy for elimination programme
2. Development of strategic plan for elimination
3. Resources and partnership

5. SPECIFIC RECOMMENDATIONS

5.1. Policy and advocacy for elimination programme

Policy statement

Recognizing that India is a signatory to the resolution (N0. 50.29) of 50th World Health Assembly for elimination of filariasis

and

acknowledging that annually Rs. 3000 crores is lost due to the disease in the country and that lymphatic filariasis is potentially eliminable and that recent advances in knowledge and tools be used as a window of opportunity for elimination of filariasis

and

knowing that there is no policy for elimination of filariasis,

the meeting urges the Government of India to enunciate a policy statement on this subject

Approval of Technical Advisory Group (TAG)

It is recommended that a meeting of scientists, researchers, programme managers (state and central) as draft policy makers should be convened to prepare a policy statement. This should include definitions, feasibility and guidelines for training and preparation of advocacy material for providers, community and opinion leaders. This draft policy statement should be submitted to TAG.

Action is to be taken by NAMP

Strengthening of the structure of the programme

The current organizational structure of the programme is appropriate but would need strengthening of existing health infrastructure for implementation of the proposed elimination programme. This, along with adequate budgetary requirements would need to be examined by the above committee. It is also felt that a senior level public health officer be made responsible exclusively for this programme. Guidelines for implementation of programme at each level of operation are to be evolved.

Man-power and Information, Education and Communication (IEC)

The group recommends strengthening and intensification of training at central, state, district and primary health centre level, IEC and man-power development for successful

implementation to achieve the goal of filariasis elimination. The progress made towards this aim should be reviewed by this group before the end of this year.

5.2. Strategic plan for elimination

Policy statement

Recommends that the policy statement should be elicited by the end of year 2000.

Time frame for elimination

Given the magnitude of the problem and constraints involved in operationalization of the programme in the entire endemic area, it is recommended that the elimination programme should start functioning from year 2000 onwards and be extended over the years. Recommends launching and implementation of the programme in 30% of the endemic districts by the year 2004, 70% of the endemic districts by the year 2008 and all endemic districts (100%) by 2010. Recommends implementation of 5-10 rounds of annual single-dose chemotherapy depending on the endemicity levels of various districts. Recommends the beginning of certification from year 2015 onwards and achieve the goal of elimination by 2020. This time frame is almost similar to the global plan of action envisaged by WHO.

Choice of strategy

Recommends the annual single dose mass chemotherapy with DEC as the principal tool for achieving the goal of elimination. The possibility of introduction of DEC fortified salt in filaria endemic areas should also be examined. It was also recommended to generate data on efficacy, feasibility and safety of DEC+ Albendazole treatment in limited field trials and/or pilot studies. Further, the research outcomes in chemotherapy of filariasis should be reviewed from time to time to identify better control tools.

Morbidity management

Recommends that morbidity management shold form an integral and important component of the elimination campaign.

Reseach

Recommends development of need based IEC tools based on people's perception and knowledge of filariasis and attitude and hebaviour towards the control efforts. A standard protocol should be developed for process evaluation and impact assessment using appropriate procedures.

5.3. Resources and partnership

Estimation of resource requirements

Recommends the estimation of drug and resource requirements and cost of training, monitoring and evaluation and IEC materials

Partners

Identify all potential partners at national, state, district and community level for the elimination programme

Resource mobilization

Recommends beginning of interaction with major industries and public sector undertakings and other funding agencies to mobilize resources.

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